

On any given week, Alice is 70% likely to attend Monday class, 80% likely to attend Thursday tutorial, and 60% likely to attend both. Given that she wasn't in class on Monday, what is the probability that she will show up to Thursday tutorial?

**Solution:** Let  $M$  and  $T$  be the events that Alice attends Monday class and Thursday tutorial, respectively. By the definition of conditional probability and the axioms,

$$P(T \mid M^c) = \frac{P(T \cap M^c)}{P(M^c)} = \frac{P(T) - P(T \cap M)}{1 - P(M)} = \frac{0.8 - 0.6}{1 - 0.7} \approx 0.666.$$